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Fax Contains: 20 pages (including this she	eet). If incomplete, call [Insert your dire	ct number].
Message:	,	
APPLICATION NO.: 09/814,160 FILED: March 22, 2001 TITLE: Method, System and Computer Progra INVENTORS: Dimitris K. AGRAFIOTIS et al. ATTY DOCKET NO: 30923-708.201	m Product for Representing Objects in	a Multidimensional Space
Transmitted herewith:		
1. Transmittal Form (1 page) 2. Petition to Reset a Period For Reply Due to 3. Copy of Office Action dated January 14, 200 4. Copy of Power of Attorney filed July 25, 200 5. Copy of Change of Correspondence Addres	05 (10 pages) 3 with stamped retum postcard (3 page	98)
Ref: 30923-708.201	Return Original to: Michael Boyd	Location: SD

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			aber	09/814,160	
TRANSMITTAL		Filing Date		March 22, 2001	
FORM		First Named Inve	entor	Dimitris K. AGRAFIOTIS	
(to be used for all correspondence af	ler initial filing)	Art Unit		2122	
		Examiner Name		Hoang Vu A Nguyen Ba	
Total Number of Pages in This Submissio	n 19	Attorney Docket	Number	30923-708.201	
	ENCLOSU	RES (Check all that	apply)		
Fee Transmittal Form	Drawing	g(s)		After Allowance communication to Technology Center (TC)	
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Amendment/Reply	Petition			Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)	
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				Copy of the Power of Attorney and Change of Address filed July 25, 2003	
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Response to Missing Parts/ Incomplete Application					
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or Aubrey A. Haddach, Reg. No. 48,374, WILSON SONSINI GOODRICH & ROSATI					
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Date April 12, 2005					
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WILSON, SONSINI

H & ROSA FILINGUATE

FIRST NAMED INVENTOR

Dimuro K. Applicats

ATTORNEY DOCKET NO: 1303.0876001

CONFIRMATION NO. 2182

36111 01/14/2005

STERNE, KESSLER, GOLDSTEIN & FOX PLLC 1100 NEW YORK AVENUE, N.W. WASHINGTON, DC 20085

63/22/2001

EXAMINER NGUYEN BA, HOANG YU A

ART UNIT 1(22

DATE MAILED 01/14/2005

Please find below and/or anached an Office communication concerning this application or proceeding.

PTO 90C (Rev. 10/03)

	08/614.180	AGRAFIOTIS ET ÂL
Office Action Summary	Sanga r	ArcUnit
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Diaposklen of Claims		
4) C(aim(s): 1-14 is/are pending in the application	ón	
4a) Of the above claim(\$) is/are with	ráwn from consideration:	
5) Cialm(s) is/are allowed.  6) Cialm(s): 4-12 is/are rejected.		
7) Calm(s) Is/are objected to		
B) Claim(s) are subject to restriction and	J/or election requirement.	
oplication Papers		
9 The specification is objected to by the Exami	ner	
10) The drawing(s) filed on is/are: a) a		
Applicant may not request that any objection to the Replacement drawing sheet(s) including the corn		
11) The cath or declaration is objected to by the		
Morlby under 35 U.S.C. § (19		
12/ Acknowledgment is made of a claim for forei	on offerity under 35 U.S.C. § 11	9(a)-(d) or (f).
a) All b) Some c) None of:		
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## Application/Control Number: 09/814,160 Art Unic 2122

Page 2

#### DETAILED ACTION

- This action is responsive to the amendment filed August 24, 2004.
- 2. Claims 1-14 remain pending.

#### Response to Amendments

- 3. The objection to the drawings as being informal and incomplete because Figure 2 is missing is hereby-withdrawn.
- 4. The objection to claims 1, 7, 8 and 14 is withdrawn in view of Applicant's amendments to these claims to correct some minor informalities.

#### Response to Arguments

- Applicant's arguments that the rejection of claims 1-14 under 35 U.S.C. § 112, second paragraph as being indefinite is improper are not persuasive. The rejection of these claims is thus maintained. The Examiner does not dispute Applicant's assertion that in light of the disclosure provided throughout the application and the teachings of the prior art, one of ordinary skilled in the air would understand that n and mas used in the claims and throughout the specification represent the number of dimensions where more. However, one still cannot ascertain how large mean be for infingement purposes. Furthermore, Applicant also asserted that name more specific integers. Could then n and m be real numbers? If yes, then can a method of mapping a set of 100:123-dimensional input patterns to 25:111-dimensional outputs be enabling?
- 6. The rejection of claims 2, 4, 5, 7, 9-14 under 35 U.S.C. § 112, second paragraph as being indefinite is withdrawn in view of Applicant's amendments to these claims to correct the lack of antecedent basis of some identified terms.

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- Applicant's arguments that the rejection of claims 2, 4-5, 7 and 9, 11-12 and 14 under 35 U.S.C. § 101 is improper and should be withdrawn have been fully considered. However, the Examiner respectfully disagrees with Applicant's assertion that the Examiner has noted that independent claims 1 and 8 are directed towards paternable subject matter. It is noted that a lack of an explicit rejection of these independent claims is not to be construed as an admission that these claims are directed towards statutory subject matter. After consideration of Applicant's arguments, the Examiner found that claims 1 and 8 are indeed being directed to non-statutory subject matter. A rejection of claims 1 and 8 under 35 U.S.C. § 101 is thus presented bereinafter.
- 8. Rejection of claims 1-14 under 35 U.S.C. § 102(b).

Applicant's arguments that Pao fails to teach or suggest the two method steps recited in claims 1 and 8 because these two method steps use a clustering methodology

In response the Examiner notes that the clustering methodology is not recited in these limitations. Applicant's arguments are therefore moot.

Applicant further argued that Pao does not teach or suggest;

determining an dimensional reference point

partitioning T into a disjoint dusties. Of bised on a distance function d

mathing a independent local networks with the respective pattern subsets. Of

for an additional indimensional input pattern, determining the distance to each

reference point in (ci)

identifying the reference point q, closest to the input pattern xmapping  $x \rightarrow y$ ,  $y \in R^m$ , using the local neutral natural. Net y associated with the reference point q identified in step (ii)

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Applicant further cited portions of Pao that describe details of Pao's method of dimensionally reducing non-linear mapped data by a neural network without elaborating on the differences between the two reachings. Applicant's arguments are thus not persuasive. Therefore, the rejection of claims reciping the above limitations under 35 U.S.C. § 102(b) as being anticipated by Pao is considered still proper and maintained and repeated hereinafter for Applicant's convenience.

#### Claim Rejections - 35 USC § 101

9. 35 U.S.C. § 101 reads as follows:

Whoever invents of discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the combinors and requirements of this title.

10. Claims 1-14 are rejected under 35 U.S.C. § 101 as being directed to nonstatutory subject matter.

Claims I and 14 are rejected under 35 U.S.C. § 101 as being directed to nonstatutory subject matter:

Claim 1 recites a method of mapping a set of input patterns to a set of outputs and claim 8 recites a computer program product comprising a computer usable medium having computer readable program code means embodied in said medium for causing an application program to execute on a computer the steps of claim 1.

The Office's interpretation of these claims is that they do not expressly require performance of any of the steps by a machine, such as a general purpose digital computer. Structure will not be read into the claims for the purposes of the statutory subject matter analysis although the steps might be capable of being performed by a machine (as recited in the preamble of claim 14).

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The computer program product recited in claim 8 is non-functional descriptive material and is not statutory subject matter.

Statutory subject matter requires two things: 1) it must be in the "useful arts or technological arts;" and 2) it must not fall within one of the exceptions for "laws of nature, physical phenomena and abstract ideas." The Office's interpretation is that claims 1 and 8 are directed to non-statutory subject matter under the "abstract idea" exception.

The fact that a claimed method is not fied to a machine, even if the method could be performed by a machine, and that it does not recite a transformation of physical subject matter to a different state or dung, is an indication that the method is a disembodied "abstract idea" and is not a practical application, as broadly claimed.

Claims 2-7 and 9-14 are not limited to "a practical application of an abstract idea which produced a useful, contrete, and tangible result." State Street Bank & Trust v. Signature Financial Group, Inc., 149 F. 3d 1568, 1375 n. 9 (Fed. Cir., 1998).

Specifically, the claims are directed to an algorithm comprising a series of steps that are based on formula with variables, the range of which not clearly defined.

These algorithm and mathematical formula are alistract ideas that do not produce useful, concrete, and tangible results under the State Street Formulation.

On this basis, claims 1-14 are rejected under 35 U.S.C. § 101.

#### Claim Rejections - 35 U.S.C. § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a parent unless -

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- (b) the invention was parented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
- 12 Claims 1-14 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,734,796 to Pao.

#### Claims 1 and 8

Pao discloses at least:

- (a) ceating a set of locally defined namel networks travial according to a mapping of a sulset of the nedimensional input patterns into an inclinensional empat space (see at least Figure 15 and related discussion in the specification); and
- (b) mapping additional medicinesional impactionies using the locally defined resault networks (see at least Figure 15 and related discussion in the specification).

#### Claims 2 and 9

The rejection of base claims 1 and 8, respectively is incorporated. Pao further discloses:

- (i) selecting k patterns from the subset of indimensional imput patterns, (x, i = 1.2 ...  $k \times R$ ) (see at least Figure 1b and related discussion in the specification);
- (ii) mapping the powers  $\{xi\}$  into an indimensional space  $\{xi->y_i, i=1,2,...,k,y\in R^n\}$ , to form a training set  $T=\{\{xi,y_i, i=1,2,...k\}$  (see at least Figure 1b and related discussion in the specification):
- (iii) determining an dimensional reference points, (ii. i=1,2,...; is i=1,2,...; (see at least Figure 1b and related discussion in the specification);

Application/Control Number: 09/814;160 Art Unit: 2122

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(id) partitioning T into a disjoint clisters () based on a distant function d. () = (((xi, y), d(xi, q))  $\leq d(xi, dk)$  for all k = /j; j = 1, 2, ..., q i = 1, 2, ..., k) (see at least Figure 1b and related discussion in the specification)

(i) training condependent local nationles {  $Net_i^l$ , i = 1, 2, ... c }, with respective pattern subsets (4 (see at least Figure 1b and related discussion in the specification).

#### Claims 3 and 10

The rejection of base claims 1 and 8 and intervening claims 2 and 9, respectively are incorporated. Pao further discloses wherein said step (a) is performed using a disterine methodology (see at least 1:31-43).

#### Claims 4 and 11

The rejection of base claims I and 8 and intervening claims 2 and 9, respectively are incorporated. Pao further discloses:

- (1) for an additional redimensional input patien x E Pt, determining the distance to each reference point in [c] see at least Figure 1b and related discussion in the specification);
- (ii) identifying a reference point; doesn'to the orpia pattern't (see at least Figure 1b and related discussion in the specification); and
- (iii) reapping x ->x y E R"; is up the local resural network Net! associated with the reference point c identified in step (ii) (see at least Figure 1b and related discussion in the specification).

#### Claims 5 and 12

The rejection of base claims I and 8 is incorporated. Pao further discloses uberan step (a) comprises the steps of

(i) selecting k patterns of the set of nonversional input patterns,  $\{x_i, i=1,2,$ 

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... k,  $x_i E(R)$  (see at least Figure 1b and related discussion in the specification);

(ii) mapping the patterns (i.) into an median size of  $(x_i - >y_i, i = 1, 2, ..., k, y_i E. R^n$ , to form a manage set  $T = \{(x_i, y_i, i = 1, 2, ..., k\}$  (see at least Figure 1b and related discussion in the specification);

(iii) determine a redimensional reference points, (ci. i = 1, 2...c, c,  $ER^n$ ) (see at least Figure 1b and related discussion in the specification).

(ii) partitioning T into c disjoint clients G based on a distance function d,  $(G - \{(x_i, y), d(y_i, c)\} \le d(y_i, c)$  for all  $k - \{(j, j) = 1, 2, ..., c, l = 1, 2, ..., k\}\}$  (see at least Figure 1b and related discussion in the specification);

(i) nationing condependent lead nationly { Net, i = 1, 2, ... c}, with the respective pattern subsets C (see at least Figure 1b and related discussion in the specification); and

(u) training a global natural Net using all the patterns in T(see at least Figure 1b and related discussion in the specification).

#### Claims 6 and 13

The rejection of base claims 1 and 8 and intervening claims 5 and 12 are incorporated. Pao further discloses uberem said step (iii) is performed using a discious methodology (see at least 1:31-43).

#### Claims 7 and 14

The rejection of base claims 1 and 8 and intervening claims 5 and 12 are incorporated. Since claims 7 and 14 recite the same limitations of claims 4 and 11, respectively, the same rejections are therefore applied.

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#### Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Floang-Vu "Antony" Nguyen-Ba whose telephone number is (571) 272-3701. The Examiner can normally be reached on Tuesday. Finlay, 645 to 1645.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Tuan Dam can be reached at (571) 272-3695. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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ANTORY NGUYEN BA PRIMARY EXAMINER

Art Unit 2122 January 8, 2005

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TRANSMITTAL	Filing Date	22-Mar-01		
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			Examiner Name		Hoang Vu A Nguyen Ba
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Title: Method, System and Computer Program Product	for Representing Object Relationships in a N	Multi-Dimensional Space
Inventors/Applicant: Agrafiotis et al.		<u> </u>
Application Serial No: 09/814,160	Filing Date; March 22, 2	001
Type of Application:  Provisional  Original	CIP Continuation Divisional	□ PCT
☐ Transmittal of Patent Application ☐ Specification and Abstract pages ☐ Claim pages ☐ Drawings pages ☐ Missing Parts of Application Transmittel ☐ Declaration/Oath ☐ Decl_/Power of Atty ☐ Power of Attorney ☐ Power of Atty by Assignee	☐ Fee Transmittal ☐ Filing Fee \$ ☐ Claims in excess \$ ☐ Independ, claims in excess \$ ☐ Multiple Dep. Claims \$ ☐ Surcharge \$	☐ Extension of Time fee \$ .  ☐ RCE fee \$ .  ☐ Issue fee/adv order \$ .  ☐ Other fee () \$
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Express Mail Certificate No: EV 517725373 US First Class Mail Authorization to Charge Deposit Account No. 23-2415	☑ Other: Change of Correspondence Add	AUS 2 4 2004
Attorney Docket No. 30923-708.201 Attorney: Aubrev A. Haddach	Date Mailed: August 24, 2004	The name of the state of

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